

REMARKS

Claims 40-48, 50, 57-63, 65-66 and 70 remain pending herein.

1. Claims 65 and 66 were rejected under §112, second paragraph. The amendments herein to claims 65 and 66 attend to this rejection. Accordingly, withdrawal of the §112, second paragraph rejection is respectfully requested.

2. Claims 40-42, 44-48, 50, 57-60, 63 and 65-66 were rejected under §103 over Sonntag in view of Hida. This rejection is respectfully traversed for the following reasons.

As explained in Applicant's prior response, the claimed invention is drawn to a ceramic component that includes a ceramic body comprising silicon carbide, and an oxide layer. The oxide layer contains an amorphous matrix phase comprising silica and a crystalline phase provided in the amorphous matrix phase. Of particular consequence, the crystalline phase comprises anisotropically shaped crystals comprising at least one of alumina and an aluminosilicate.

The claimed invention was developed to address deficiencies of prior art ceramic components that incorporate an oxide layer, including state of the art components that include an amorphous (silica-based oxide layer) or conventional crystalline layers. The claimed component can be manufactured through a process in which fine alumina is coated on the ceramic component, followed by oxidation in a manner to form the characteristic multi-phase material, including the amorphous matrix phase and the crystalline phase provided therein. Applicant has discovered that the claimed ceramic component offers desirable oxidation resistance even in demanding deployments such as exposure to heat cycling in refractory applications.

The disclosure of Sonntag generally belongs to the state of the art, and while disclosure is present regarding a "part-crystalline" oxide layer, it is quite clear that Sonntag mainly focuses on the formation of a desirably all-crystalline oxide layer. It is submitted that while disclosure is present regarding a "part-crystalline" oxide layer, there is absolutely no teaching or suggestion of an amorphous matrix phase in which a crystalline phase is embedded. In this respect, the term "matrix" is not used in Sonntag in connection with the oxide layer, but rather, only the

underlying ceramic body. There is no disclosure or suggestion that would leave one of ordinary skill in the art to believe that the amorphous content is sufficient to form a matrix, as claimed. In this respect, the PTO has failed to properly address this important claim limitation.

In any event, the disclosure of the prior art fails to even remotely suggest the claimed anisotropically-shaped crystals comprising at least one of alumina and an aluminosilicate. While Sonntag fails to disclose or suggest anisotropically shaped crystals, the PTO has inappropriately relied upon Hida for alleged disclosure of such crystals.

Hida is drawn to formation of a composite body containing α -silicon carbide and α -alumina. The majority percentage of the silicon carbide is in the form of whiskers, that is, anisotropically shaped particles having a diameter of 0.5 to 1.5 microns, a length from about 20 to 200 microns, and an aspect ratio of 40 to about 120. Hida goes on to disclose that the whiskers are limited to only the silicon carbide material; particularly, column 2, lines 43-48 unequivocally teaches:

The term silicon carbide whiskers refers to single crystals in needle-like form containing only the α -silicon carbide phase, having a diameter from about 0.5 to about 3 microns, having a length of at least about 10 microns, and having an aspect ratio of less than about 1:10. (emphasis added)

Applicant submits that a proper reading of Hida in contemplating modifications to the technology of Sonntag would, at best, result in formation of some of the ceramic body to contain silicon carbide whiskers. There is absolutely no disclosure or even remote suggestion of attempting to modify the oxide layer overlying the ceramic body, and absolutely no suggestion of modifying the crystals of the oxide layer of Sonntag to be anisotropically-shaped. In this respect, Applicant emphasizes that the anisotropically-shaped crystals of the claimed invention are comprised of alumina and/or aluminosilicate. In contrast, the anisotropically-shaped particles of Hida are limited specifically to silicon carbide, and even more specifically silicon carbide of a ceramic body (i.e., not a layer).

Further, even if there were some suggestion of modifying the oxide layer of Sonntag, the references do not even remotely *enable* formation of anisotropically-shaped alumina and/or aluminosilicate crystals. In this respect, the characteristic anisotropically-shaped crystals of the

claimed invention are believed to be due to the particular process flows utilized, which are quite distinct from the prior art. There is no teaching or suggestion of utilizing a process flow that results in anisotropically-shaped alumina and/or aluminosilicate crystals. The attention of the PTO is drawn to the paragraph bridging pages 7 and 8 of the previously filed response for a discussion of the technical significance of the anisotropically-shaped crystals present in the oxide layer according to the claimed invention.

For at least the foregoing reasons, Applicant respectfully submits that the presently claimed invention would not have been obvious over Sonntag in view of Hida. Accordingly, withdrawal of the §103 rejection is respectfully requested.

3. The remaining dependent claims were rejected over the asserted combination of Sonntag and Hida, in further view of several additional secondary reference (Dussaulx et al., Hillig). Applicant submits that the additional secondary references Dussaulx and Hillig fail to cure the notable deficiencies of the Sonntag/Hida "combination" as explained above. Accordingly, withdrawal of these rejections based upon the additional secondary references is respectfully requested.

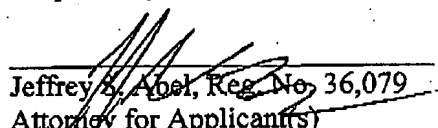
Applicant respectfully submits that the present application is now in condition for allowance. Accordingly, the Examiner is requested to issue a Notice of Allowance for all pending claims.

Should the Examiner deem that any further action by the Applicant would be desirable for placing this application in even better condition for issue, the Examiner is requested to telephone Applicant's undersigned representative at the number listed below.

Applicant does not believe that any additional fees are due, but if the Commissioner believes additional fees are due, the Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 50-3797.

Respectfully submitted,

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